

THE STARS IN DECEMBER.

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There are but few constellations to gaze upon in the December skies that we have not had occasion to admire during the month of November. But their positions have shifted. "Perseus" has moved to the very zenith, half of it behind our heads, so to speak. "Queen Cassiopeia"

favorite among constellations, is somewhat higher above the horizon; it used to be known also as "David's Chariot," or simply the "Great Chariot." The Egyptians called it the "Thigh of the Northern Sky" or the "Thigh of the Ox," and, to this day, the Arabs speak of it as "The Leg." In other countries it is called "The

Alt days to change from the second to the ninth magnitude and vice versa. Returning to the Zenith, we find "Andromeda" close to her rescuer "Perseus"; she has not yet found time to be ungrateful through these centuries of model love-making. Underneath, the faithful steed "Pegasus" displays its splendid square completed by star "a" of Andromeda. Alpha of the third magnitude, "Eridanus," its very last star toward the east, supposed to shine from the nostril of the Winged Horse, is just above the Zodiacal Constellation "Aquarius" (The Water Bearer), a sort of double triangle, with its largest star, Sahilmelk, of the third magnitude.

The west is lighted up by some admirable examples of first and second magnitude stars. To the left of the Pleiades, and partly within the domain of the Zodiacal Constellation "Taurus," shines the superb Aldebaran; under it the splendid square of "Orion" with "Betelgeuse" (The Shoulder) to the west, and "Rigel" (The Foot) to the east. The other corners of the square are marked, upwards by "Bellatrix" (The Female Warrior), downward by "Mintaka" both of the second magnitude; there are three stars of the same dimension in a row within the enclosure; they are called "The Three Kings"; truly Orion is one of the most glorious sights in the heavens. Close to the horizon, another orb of the first magnitude adds to the splendor of this celestial region; it is Procyon,

recession. During the later part of the night "Mars" sends forth its ruddy glow. "Jupiter," owing to its nearness to the sun, is not visible. "Saturn" feebly lights the first hour of night-time, then vanishes from sight. This terminates our study of the firmament during the last month of the year 1904.

C. de SAINT-GERMAIN.

Stops a Water Monopoly.

An irrigation company in Nebraska was sued by a farmer who proved that a canal dug by the company had decreased the flow of water at his place. The canal furnished water for irrigation purposes. The trial court held that he should be granted an injunction forbidding the further appropriation of water, and on appeal the supreme court sustained this view. The court held, according to an old law, that the proprietor of a river bank is entitled to have the stream flow through his land, undiminished in quantity and unimpaired in quality.

Economy in Good Roads.

The common road is the connecting link between the farm, the home, the country school house and the church. The utility of good roads requires no exposition. Leaving the railroads out of the category of public roads for which government is responsible to the people, one expert estimate states that 75 per cent of every load hauled by railroads must be carried in a wa-

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contained inside the body of the wagon and a passage for smoke is formed by a continuation of the pipe. It can be readily understood that if the wick is ignited and the feet are placed over the warming chamber and covered with a robe they will be perfectly comfortable themselves and also aid greatly in the circulation of blood through other portions of the body.

CANADIAN SEEDING DEVICE.

The sowing of grain and other fine grain evenly is a difficult task when attempted by hand and most of the patent seeders offered for sale are too costly for the average farmer to invest in, especially when it is taken into consideration that the seeder will only be used once or twice a year. With the idea of providing a cheap and simple apparatus, which will sow the seed rapidly and evenly, a Canadian inventor has designed the apparatus illustrated above. It consists of cloth sack suspended from the shoulder and provided at its single lower corner with a funnel leading into the distributing tube. The funnel has an internal gate to limit the amount of grain passing through. In the outer end of the tube is arranged a series of deflecting fingers, which aid materially in the distribution of the grain which is accomplished by swinging the tube from side to side while held in a slanting position, the grain falling



GRAIN-SOWING APPARATUS.

toward the outlet as long as the end is held downward and the gate left open. Owing to the length of the tube the area covered at each swing is considerably greater than could be seeded by hand.

Muscles and Brain.

In one of his recent lectures at Clark University, Prof. Angelo Mosso of Turin averred that "Physical education and gymnastics were not only for the development of the muscles, but for that of the brain as well." It is becoming evident, he said, that as much time should be devoted to muscular exercise as to intellectual exercise, and children should begin reading and writing only after they are nine years old. Muscular fatigue exhibits phenomena identical with intellectual fatigue. Nerve cells show on the average every ten seconds a tendency to rest. It is probable that only part of the brain is active at the time, the various parts relieve each other. The more mobile any animal's extremities are, the more intelligent, other things being equal, he is.

China's Coal Fields.

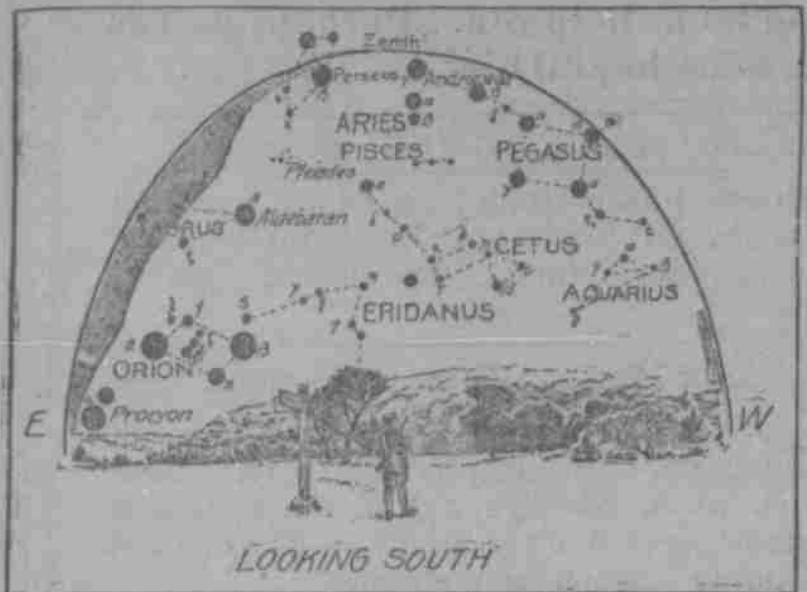
China contains some of the richest coal deposits in the world. Last fall Professor Drake of Tientsin visited the coal fields in the province of Shansi, which were examined by Baron von Richthofen in 1870, and found that they are of immense extent. The coal area is said to be greater than that of Pennsylvania, and the anthracite coal alone contained in these fields has been estimated at 630,000,000 tons. The Shansi coal beds are so thick and lie so uniformly in a horizontal position that the practicability has been suggested of running long lines of railroad tunnels through the beds so that the cars can be loaded in the mines all ready for distant transportation.

To Protect the Great Redwoods.

It was reported at the recent meeting of the American Association for the Advancement of Science that the redwood forests of the Pacific coast are now practically all in the hands of private owners who hold them for lumbering purposes. Since the redwood rivals the gigantic sequoia in size and interest, it is deemed a matter of scientific importance that it should be preserved, and the association approved the action of its botanical section in favoring the purchase and preservation of a public park in the Santa Cruz mountains covering more than 25,000 acres, and occupied largely by the primeval redwood forest.

Wonderful Variable Stars.

In studying the variations in the light of certain stars in the cluster known as "Messier 3," Professor Hally has found one star whose changes are so rapid that in thirty minutes it gains more than an entire magnitude. In other words, becomes more than two and a half times as bright as it was at the beginning. Several others vary with a rapidity almost equally startling. Their entire period of variability from one maximum to the next is about half a day, but they gain light much quicker than they lose it. It seems impossible to regard such stars as suns in the sense of our sun.



LOOKING SOUTH

above her "King Cepheus" has slid to the west, while "Auriga" with its beautiful "Capella" (The She-Goat) and her "Kids," has followed Perseus up to the Zenith. The Cross of "Cygnus" (The Swan) is never more beautiful than during this month as it lies among the million stars that form the "Milky Way"—"St. Jacob's Road," as the French peasants call it. Its largest star Deneb (Arabic for "Tail") is of the second magnitude; the star at the opposite extremity of the same arm of the cross is Albireo of the third magnitude; it is said to mark the beak of the Swan. It is a double star; its larger component, a pale red, its smaller one, a beautiful blue. To the right of Cygnus, the curiously complicated shape of "Draco" (The Dragon) with its six folds, forms first a small, lower square, then a triangle between Cygnus and the Little Dipper; finally its neck and head end with the handsome Thuban of the third magnitude, just between the two Dippers. As I stated before Thuban was 4,640 years ago the pole star; the change is due to a small annual alteration in the position of the earth's axis, of which I may have to speak again.

This month the Great Dipper, this

Jackal," the leader of the "Celestial Dogs." Further west, the last stars of the Great Dipper, popularly known as the Pointers look straight toward the superb Castor and Pollux (second magnitude) of the Zodiacal Constellation "Gemini" (The Twins). Just below Pollux, shines feebly the insignificant stars constituting the Zodiacal Constellation "Cancer" (The Crab). A pretty aggregation of minor stars, a "nebula" called "Procyon" has its home within the domain of Cancer. With Vega, the first magnitude star of "Lyra" (The Lyre) toward the west and close to the Milky Way, this aspect of the sky is completed. Now let us turn about, and begin looking southward.

Above our heads shines the other half of "Perseus"; under it, in succession, the two Zodiacal Constellations "Aries" (The Ram) and "Pisces" (The Fishes), the splendid cluster of the "Pleiades" to the left of Pisces.

Just underneath, behold the star "a" of "Cetus" (The Whale), in the jaw of the beast; it is called Menkar and is only of the third magnitude; "Mira-Coeli" (The Marvel of the Heaven) belongs to the same Cetus; I told you last month, all about its strange vagaries; I will add that it takes this star



LOOKING NORTH

of the Constellation "Canis Minor" (The Little Dog). Toward the middle of the horizon "Briarrosa" (The River Eridanus) displays its zigzag shape, not unlike the course of its prototype, the Italian River Po.

Until the 20th, "Mercury" lights the east, just before sunrise; after that date it becomes invisible. Before day-break "Venus," now the morning star, shines splendidly in the eastern di-

son or truck over a highway. No more convincing proof is needed that building and maintaining highways is a question of a wise public policy.

A letter from Theodore Parker, the famous Unitarian preacher and reformer, to James Freeman Clarke, with marginal comments by the latter, was sold in Boston the other day for \$75.

A Great Moving Army Needed.

Can any one offer any valid objection to this proposition?

Increase the army of the United States from its present size to 1,000,000 men. Divide it into departments limited to states and put each department under a good general who understands how to superintend the construction of good roads. Then put every mother's son of the great army at work. Each state would bear its own part in the expense. In ten years time we would have a system of good

roads that would last for the centuries. What is an army good for if it can't build good roads in time of peace. Those who offer great objections to a vast standing army could not find fault with a vast moving one of such a character.—Ex.

Senator Hoar of Massachusetts always prepares his speeches most carefully, and although he often appears to have no notes, yet what he says has generally been determined upon even to the slightest word at least a day in advance.

Automobile Fire Engines.

Electricity has gained another victory over horse and steam power. The fire department of Paris is now abolishing horses from all the fire engine houses of the city and is selling its old fashioned steam fire engines to country towns. It is a strange sight when the fire alarm sounds to see the ponderous doors of the engine houses fly open and from it emerge the modern electric fire engines manned by only two men. There is none of the old stamping and dashing of fiery steeds, impatient to rush down the crowded avenues to the scenes of conflagration. Here again, of course, is the spectacle of the loss of occupation to a lot of brave fellows. The stablekeepers and the grooms have been driven out. Instead there is a single engineer for each vehicle, whose sole occupation is to keep his auto-engines in trim during the long leisure hours between fires and to

manipulate them when the fire alarm sounds.

The engine and the hook and ladder hurry to the fires in much quicker time than the fastest horses could have gone. All the old dash of wind, almost uncontrollable horses, driven by a man who seems on the point of being dragged from his seat; the confusing sounding of bells and horns and shouting of the spectators, cursing of drivers and street passengers, taken unawares—all this is a thing of the past. Instead the trim electric fire engine wends its way with comparative little noise and conspicuity through the crowded thoroughfares. All that warms of its approach is the constant ringing of a loud electric bell, which does not vary even when the passage is obstructed. The police, however, are instructed to arrest the driver of any vehicle that does not at once respond to the electric warning.



AN AUTOMOBILE FIRE ENGINE.

A Royal Engagement.



Prince Louis Napoleon and the Grand Duchess Helena of Russia are officially announced affianced husband and wife from St. Petersburg. Louis has been an officer in the Russian army for the past fifteen years, and is now a general of cavalry. His command is the regiment of the Carlinas of the Muscovite army. His betrothed is the daughter of the Grand Duke Vladimir, uncle of the czar. She is one of the most eligible princesses of all Europe. This alliance is bound to strengthen the cause of the Bonapartist faction in France. Prince Louis

is the much beloved of the reactionaries. He is respected far more than either his brother, Prince Victor, who was disinherited by his father, Jerome Napoleon, or Prince Louis of Orleans, the royalist pretender. Louis Napoleon is a soldier, a strong man, watchful of his opportunities, purposeful and ambitious. He is a stranger to France, unlike his brother Victor, the natural heir to the imperial throne, he has been "preparing himself for war" with France always in view. Little has been heard of him since he entered the Russian military service almost a year.

Loves Hard Rowen Connecticut.

They have some queer, old-fashioned notions down in Connecticut. The other day a man named Lewis E. Dilley, aged thirty-eight, announced to the citizens of Hartland, a small town in the interior of the state, that he was about to marry Mrs. Gower, a widow sixty-six years of age, by whom he has recently been employed as a farm hand. He had even secured a license, and she had made various preparations for the thrilling event. Then the neighbors began to get interested. They held mass meetings and made speeches, and came to the general conclusion that Dilley was an infamous, wretch—a base deceiver—who wanted the Widow Gower's money, for it was known that besides her farm she had \$1,000 in the bank. No man, they argued, would want to marry a widow sixty-six years of age except for the gratification of mercenary motives. Having thus decided, they sallied forth to cover Mr. Dilley with tar and feathers. This they were unable to do on account of Dilley's powers as a sprinter, but one angry old man succeeded in tearing the marriage license out of the lover's hand as he whizzed past, and the document was quickly rendered unfit for further

use. Dilley, safe in an adjoining county, is now threatening legal proceedings, and the widow is sighing alone and waiting. The case teaches a lesson that is very plain. Dilley should have had the foresight to pose as an impetuous dude or a hare-brained count, and the old woman should have disguised herself as the daughter of some railroad king. If they had done that no man in Connecticut or anywhere else would have dared to cut the wire or pull out the plug or otherwise break the circuit. The people of Connecticut should be severely censured. If our beautiful, golden-haired young girls, scarcely past twenty-one and heiresses to millions, may make fools of themselves and by so doing reach lofty social stations, why shall our 60-year-old widows be rudely yanked out of Love's young dream? Somewhere in this business a balance must be struck, and the earlier it is done the better will it be for all concerned.

The Prince of Wales has taken to writing verse. It is said in London that a small volume containing a collection of his works is to be handsomely printed, but only for private circulation.